Sponge-Jet® Sponge Blasting System

Sponge-Jet™ Feed Unit™ User Manual™

Model:

85L

150L

240L

240XL

Sponge-Jet, Inc. (USA)
235 Heritage Ave, Suite 2
Portsmouth, NH 03801
tel (603) 431-6435
www.spongejet.com

Sponge-Jet Europe Ltd.
Robson Way, Blackpool
United Kingdon FY3 7PP
tel +44 (0) 1253-390731

1.0 Introduction

Sponge-Jet® Feed Unit™ equipment is the propulsion unit for blasting Sponge-Jet Sponge Media™ abrasive. Its purpose is to deliver any of a wide variety of Sponge Media abrasives during surface preparation, cleaning and/or decontamination. The equipment is designed for operation with clean, dry compressed air by a skilled and trained operator in temperatures above freezing.

Maximum inbound pressure should be limited to 8.6 bar (125 psi) with a recommended maximum output of 6 bar (85 psi) at the nozzle, regulated on the Feed Unit.

1.1 Warning

1. The use of bleeder type deadman valves can cause unintentional start-up without warning, which can result in personal injury.
2. To prevent electrostatic buildup and possible electric discharge, the unit and work piece must be properly bonded and grounded.
3. Connecting unit to a compressed air source exceeding the recommended pressure is not only dangerous but may also damage the pressure regulations in the Sponge-Jet Sponge Blasting System.
4. No warranty is given or implied as to the use of equipment and media for any particular application. Always check suitability of the system on small test areas prior to use.
5. Moisture separator drain-offs must always be slightly open to allow water to escape.
6. When operating the Feed Unit in conditions of high ambient air temperature or humidity, the Feed unit must be equipped with auxiliary moisture separation and temperature reduction devices, supplied by the end user.

2.0 Transportation

The Sponge-Jet Feed Unit is designed to be transported in three different manners: **Manual Wheeling, Forklift**, and the **Overhead** lift.

Manual Wheeling

The Sponge-Jet Feed Unit is equipped with four caster wheels. Two casters swivel for steering, one of which locks for stationary operation.

WARNING: Manual transport is only intended for use on level, smooth surfaces. Transport or operation in areas of uneven grade or unstable flooring will require additional restraining precautions.

Forklift

The Sponge-Jet Feed Unit is designed for forklift transport using the provided double pockets on two sides of the frame.

WARNING: Forklift transport not utilizing the fork pockets will result in unstable operation and unpredictable load shifts and possible damage and/or injury.

Overhead Lifting

The Sponge-Jet Feed Unit is equipped with four lift eyes at the top of the frame intended for use with a proper lift set. The frame is designed for a maximum gross mass of 771 kg (1,700 lb).

WARNING: The frame design intends the use of all four lifting eyes for lifting. Transportation to and from job sites must involve adequate restraint or packing for the entire duration of the trip.

3.0 Safety

*Note 1: *125 psi / 8.6 bar (sustained) maximum inbound pressure*

The Sponge-Jet Inc. Feed Unit is a pressurized, positive air feed system. Only certified operators should adjust, maintain and repair this equipment. Sponge-Jet offers a certification program to train operators in the mechanics of the equipment as well as in Sponge Blasting applications.

- Before performing any maintenance on the Feed Unit, make sure equipment is off and depressurized. The **Main Air Ball Valve (Fig A #14)** and the **Emergency Stop Button (Fig A #17)** on the Control Panel should both be in the off position to insure the Feed Unit is not accidentally pressurized.
- From the compressor, under normal circumstances, the inbound pressure should never exceed 8.6 bar (125 psi). The pressure can be checked at the compressor or on the Feed Unit panel gauge marked **Blast Pressure (Fig A #7)**.
- When operating the Feed Unit, people in proximity should always wear eye and hearing protection with the appropriate respiratory equipment, which may depend on the type of coating or contaminate being removed.

1. Prior to pressurizing the Feed Unit, safety pins or restraints should be fitted at all bull hose and blast line couplings to prevent accidental disconnection.
2. Before blasting all pneumatic lines should be visually inspected for holes, wear, and proper fit.
3. The **Port Hole Cover (Fig B #19)** must be in place and secure prior to and during operation.
4. Never reach into the pressure pot area of the Feed Unit through the **Hopper (Fig A #2)**.
5. Never point the **Blast Nozzle (Fig E #38)** towards yourself or others.
6. Do not remove the **Auger Chain Guard (Fig G #53)** to the Auger while a Feed Unit is in operation.

4.0 Operation & Shutdown

4.1 Operation of the Feed Unit

Working temperature conditions for the Feed Unit should always be above freezing. Verify that the machine is secured in an appropriate manner for operation.

Inspect the Blast Nozzle (Fig E #38) for wear and proper engagement of hose connections. Once the Blast Nozzle bore has worn 2mm (1/16") beyond its original inside diameter it should be replaced.

Remove the Blast Nozzle (Fig E #38) and ensure that it is equipped with a Blast Nozzle washer. Replace the Nozzle and washer insuring that the nozzle washer lies flat in its seat.

Visually inspect all Blast Hose (Fig E #33) and connections. Repair or replace any worn or damaged components. Ensure that all couplings are equipped with coupling gaskets and safety pins or hose restraints, and that they are all properly installed.

Connect the compressor to Feed Unit **Supply Line Connection (Fig B #21)** and secure with safety pins or restraints. Sponge-Jet supplies Feed Units with a single four (4) lug "Chicago" fitting on a 1.25" National Pipe Thread (NPT) nipple.

WARNING: System is designed for a maximum 8.6 bar (125 psi). Failure to install safety pins and proper restraints (dog leash / whip checks) on the bull hose may result in personal injury.

Securely attach the Sponge-Jet Feed Unit's **Port Hole Cover (Fig B #19)** with the gasket in place.

Connect the **Blast Hose (Fig E #33)** and the **Deadman Trigger (Figure E #36) Control Lines (Fig E #34)**. Sponge-Jet supplies blast hose connections with two (2) lug "Universal" fittings also on 1.25" NPT nipple at the Feed Unit.

Fill the Feed Unit, through the **Hopper (Fig A #2)**, with the desired amount and type of Sponge Media abrasive. The **Hopper Lid (Fig A #1)** must be in place prior to pot pressurization.

Check that the **Main Air Ball Valve (Fig A #14)** is in the closed position and charge the supply line.

At the nozzle operator's command, open the **Main Air Ball Valve (Fig A #14)** verify that a minimum of 7 bar (100 psi) of inbound supply air registers on the **Line Pressure Gauge, (Fig A #6)** on the Feed Unit **Internal Control Panel (Fig F)**.

After the operator depresses the **Deadman Trigger (Figure E #36)** allow the Feed Unit to pressurize. This may take 5 to 10 seconds.

CAUTION: Do not cycle the Deadman Trigger while waiting for abrasive at the Nozzle (as in conventional abrasive blasting). Cycling the Deadman Trigger will usually clog the Blast Nozzle and Blast Line.

Once the **Inbound Pressure Gauge (Fig A #6)**, **Blast Pressure Gauge, (Fig A #7)** and the **Media Feed Gauge, (Fig A #8)** have stabilized in operation, adjust the **Blast Pressure Adjustment Handle, (Fig A #16)** and the **Media Feed Adjustment Handle (Fig A #15)** to the desired levels. Clockwise (inward) adjustments increase pressures.

Do not exceed a **Blast Pressure Gauge (Fig A #7)** reading of 6 bar (85 psi) (note 2).

Adjust the **Media Feed Gauge (Fig A #8)** to the desired level (usually 2.8 bar (40 psi)) for initial operation, using the **Media Feed Adjustment Handle (Fig A #15)**. Confirm that the **Blast Pressure Gauge, (Fig A #7)** remains at the desired level.

Once the desired **Blast Pressure Gauge, (Fig A #7)** and **Media Feed Gauge (Fig A #8)** levels are obtained, visually confirm that the **Auger Shaft (Fig G #50)** is rotating and that the **Agitation Indicator Eye (Fig A #9)** is functioning.

These levels should remain constant unless adjusted.

Sponge Blast™ the desired surface.

4.2 Shutdown of the Feed Unit

The red **Emergency Stop Button (Fig A #17)** located on the control panel can be used to stop all functions. Normal shutdown during operation is by release of the **Deadman Trigger (Fig E #36)**.

Close the **Main Air Ball Valve (Fig A #14)**.

Shut down the compressor.

Close the supply line ball valve at the compressor. **(Compressor supplied by others)**.

Once the supply of air from the compressor to the Feed Unit has been closed, open the **Main Air Ball Valve (Fig A #14)** at the Feed Unit. Point the **Blast Nozzle (Fig E #38)** at the working substrate and depress the **Deadman Trigger (Fig E #36)**.

Keep the **Deadman Trigger (Fig E #36)** depressed until all remaining air is vented from the Feed Unit and the Blast Line.

Once all gauges on the Feed Unit Control Box read “0” PSI, confirm that the supply line from the compressor is soft & pliable. If so, it is safe to disconnect the line from the Feed Unit.

If the prior steps have been followed exactly, the supply line from the compressor to the Feed Unit should now be vented and safe to disconnect.

WARNING: Before disconnecting the compressor supply line, ensure that all gauges on both the Feed Unit and the Compressor register “0” PSI. Allowing for adequate evacuation time as well as determining hose pliability are important safety precautions that must be utilized when disconnecting any high-pressure air supply line.

- If the Feed Unit is to remain out of service for more than one day, remove by vacuum all residual media from the Feed Unit or the **Hopper (Fig A #2)**, through the **Port Hole (Fig B #19)**.
- The resulting product of process, dependent on use must be disposed of in accordance with local and/or Federal regulations governing hazardous waste disposal.

5.0 Maintenance

To provide long and reliable service, the components of the Sponge-Jet Feed Unit require routine maintenance. During all maintenance operations the Feed Unit must be shut down.

5.1 The following maintenance activities should be performed prior to each use of the Feed Unit:

- Inspect the **Blast Nozzle (Fig E #38)** for wear. Once the nozzle bore has worn 1/16" / 2mm beyond its original intended diameter, it should be replaced.
- Remove the **Blast Nozzle (Fig E #38)** and ensure that it is equipped with a nozzle washer between the nozzle and its holder. Replace the nozzle and washer taking care to see the washer in its holder.
- Visually inspect all **Blast Hose (Fig E #33)** and connections. Repair or replace any worn or damaged components. Ensure that all couplings are equipped with coupling gaskets and safety pins, and that they are properly installed.
- Remove the **Exhaust Muffler (Fig C #3)** Remove any accumulated media from within it. **WARNING: Do not operate equipment without muffler in place.**
- Media should be stored under cover, preferably under dry, controlled temperature and humidity levels. Refer to Sponge Media abrasive **Material Safety Data Sheets**.

5.2 The following maintenance should be performed after each 80 hours of operation:

- Remove and inspect the interior of the **Secondary Water Separator (Fig A #13)**. Remove any contaminants that have accumulated in the bowl. Replace.
- Visually inspect the "O" ring on the **Secondary Water Separator (Fig A #13)** and **Moisture Separator (Fig A #13 & Fig B #22)**. Replace if the "O" ring has been damaged or worn.

5.3 The following maintenance should be performed monthly:

- Remove **Auger Chain Guard (Fig A #12)**; inspect the condition of the **Auger Drive Chain (Fig A #52)**. Apply lightweight lubricating oil as necessary then replace the **Chain Guard**.
- Lubricate each Stationary and Swivel Caster Wheel with multi-purpose grease as needed.
- Inspect all pneumatic component supply lines for wear, damage and connection security.

6.0 Troubleshooting

Inevitably circumstances arise that can adversely effect the performance of the equipment. The following section will guide a trained operator in the proper diagnosis of equipment operating problems.

It is strongly recommended these procedures be retained with each Feed Unit as a reference guide. Sponge-Jet, Inc. In case of difficulty, call your local distributor or representative.

Technicians are available 24 hours a day, 365 days a year by calling the U.S.A.: 800-SPONGEJET (800-776-6435) or 207-439-0211

6.1 Feed Unit will not run:

1. Check that **Main Air Ball Valve (Fig A #14)** is open.
2. Check that **Emergency Stop Button (Fig A #17)** is not pushed in.
3. Check that the **Control Line (Fig E #34)** connections at the Feed Unit and at the **Deadman Trigger (Fig E #36)** handle are secure.
4. Check for holes or other damage in the full length of the **Control Lines (Fig E #34)** and repair as necessary.
5. Check that the **Line Pressure Gauge (Fig A #6)** registers adequate pressure. If necessary, turn on or charge the compressor.
6. Test Feed Unit for proper operation.

6.2 If the Feed Unit will still not run:

1. Depress and then release the **Deadman Trigger Handle (Fig E #36)** with the **Main Air Ball Valve (Fig A #14)** open and the Feed Unit pressurized.
2. Listen for an exhaust of air from behind the **Deadman Trigger Handle (Fig E #36)** when this handle is released.

6.3 If an exhaust of air is not heard at the Deadman Trigger handle:

1. Close the **Main Air Ball Valve (Fig A #14)**.
2. Remove the red tubing line from the right side of the **Aquamatic Valve (Fig A #10)**.
3. Slightly open the **Main Air Ball Valve (Fig A #14)** and listen for a leak of air from the **Aquamatic Valve (Fig A #10)**

6.4 If no air is heard coming from the Red tubing line on the right side of the Aquamatic Valve:

1. Check for obstructions in the supply line from the compressor to the Feed Unit.
2. Check that compressor is on, and that the bull line is charged with air.
3. Re-test the **Deadman Trigger Handle (Fig E #36)**.
4. Resume blasting

6.5 If an exhaust of air is heard at the Deadman Trigger Handle when the Deadman Trigger Handle is released:

1. Remove the Red Air Line from the **Exhaust Valve (Fig C #5 & Fig A #5)**.
2. While holding the Red Air Line securely, depress the **Deadman Trigger Handle (Fig E #36)** and feel for a blast of air at the Red Air Line.

6.5.1 If air is felt flowing through Red Air Line:

1. Stop flow of air from red line by placing thumb over that line. This will test for a possible ruptured exhaust valve diaphragm.

6.5.1a If Feed Unit then starts up:

1. Remove thumb from red line (Red Air Line).
2. Replace **Exhaust Valve Diaphragm (Fig C #17)**.
3. Resume blasting.

6.5.1b If Feed Unit does not start up and an air leak is exhausting from Aquamatic Valve Exhaust:

1. Replace **Aquamatic Valve (Fig A #10)** gasket.
2. Resume blasting.

6.6 At initial start up, the Feed Unit will not stop running:

1. Depress the **Emergency Stop Button (Fig A #17)** on the **Control Panel (Fig F)**.
2. Once Feed Unit has stopped running with the **Deadman Trigger Handle (Fig E #36)** still not depressed, pull the **Emergency Stop Button (Fig A #17)** out. After assuring that compressed air and abrasives from the Nozzle cannot do damage or injury, listen for exhausting air coming from the **Deadman Trigger Handle** area **(Fig E #36)**.

3. If a continuous leak of air is heard from the **Deadman Trigger Handle (Fig E #36)** then reverse quick connect fittings at Feed Unit end of the control line, re-test according to Section 4.0 and start.

6.7 Deadman Trigger Handle (Fig E #36) is exhausting air while in shutdown condition:

1. Reverse quick connects at Feed Unit end of control line.
2. If the **Deadman Trigger Handle (Fig E #36)** is still leaking, remove **Clean Out Screw (Fig E # 35)** in **Deadman Trigger Handle (Fig E #36)**. Check for debris within the Deadman Handle, clean and replace.

6.8 Auger will not begin rotating:

1. First check that the **Media Feed Gauge (Fig A #8)** registers adequate operating pressure 1-4 bar (10 to 60 psi) while the Feed Unit is engaged.
2. If necessary, increase this pressure by turning the **Media Feed Regulator Handle (Fig A #15)** in a clockwise direction. The pressure level of the **Media Feed Gauge (Fig A #8)** should increase.

If **Auger Motor (Fig G #54)** sticks at startup or becomes sluggish at lower pressures, it may be necessary to run pneumatic hand tool oil (Note 3) through the airline to lubricate the motor.

The **Auger motor (Fig G #54)** chronically starts with difficulty, becomes sluggish, or seizes completely; it may need to be rebuilt. Sponge-Jet, Inc. offers a rebuild service. Call your local distributor or representative or, in the USA, 800-776-6435 or 207-439-0211 for details.

6.9 Auger stops rotating during normal operation:

1. Stop blasting, depressurize the Feed Unit, close the **Main Air Ball Valve (Fig A #14)** and depress the **Emergency Stop Button (Fig A #17)**.
2. Remove the **Auger Chain Guard (Fig G #53 & A #12)** and Auger Drive Chain (Fig G #52).
3. Try spinning the **Auger Sprocket (Fig G #49)** and the **Auger Motor Sprocket (Fig G #48)** by hand.
   A. If **Air Motor Sprocket (Fig G #48)** will not turn by hand, call Sponge-Jet for technical assistance at 800-776-6435 or 207-439-0309.
   B. If the **Auger Sprocket (Fig G #49)** will not turn by hand:
      - Remove the **Auger (Fig G #50)** and the **Auger Tunnel End Cap (Fig G # 51)**. Clear the sponge and/or foreign debris from the Lower End Assembly.
      - Replace the **Auger (Fig G #50)** the **Auger Tunnel End Cap (Fig G #51)** the **Auger Drive Chain (Fig G #52)** and **Auger Chain Guard (Fig G #53)** and restart the blasting process. Return the media feed pressure to its desired level between 1-4 bar (10-60 psi). If the auger still does not rotate, call Sponge-Jet in the U.S.A. (800-776-6435 / 207-439-0211) for further assistance.

6.9.1 Air Flow Through Nozzle Suddenly Stops:

1. Stop any attempt to restart, and depress the **Emergency Stop Button (Fig A #17)** immediately! Depressurize the Feed Unit and close the **Main Air Ball Valve (Fig A #14)**.
2. Remove **Blast Nozzle (Fig E #38)** from **Blast Hose (Fig E #33)** and inspect for obstruction. Remove as necessary.
3. Disconnect all blast line connections and inspect for obstructions. Clear as necessary.
4. Remove the **Auger Tunnel End Cap (Fig B #23)** and disconnect the blast line at the Feed Unit. Check for media clog(s). Remove clogs if necessary. Replace **Auger Tunnel End Cap (Fig B #23)**.
5. If an obstruction occurs in the **Auger Tunnel End Cap (Fig B #23)** area of Feed Unit, rotate the **Media Feed Regulator Handle (Fig A #15)** in a counter clockwise direction to the "off" position. Clear the obstruction.
6. Resume blasting. Once a full stream of air **without media** is achieved, slowly return the **Media Feed Gauge (Fig A #8)** back up to the desired pressure by adjusting the **Media Feed Regulator Handle (Fig A # 15)** in a clockwise direction

6.9.2 Air Flows through nozzle but with no media and auger is rotating:

Note: After start up, media flow is not instantaneous. Even with only 50' of final blast line, initial media flow may require 15 seconds. Stabilized media flow may require up to 4 minutes. Conditions may change that period up or down.

1. Check that Feed Unit contains an adequate amount of media. Fill if necessary.
2. While the Feed Unit is in operation, check that the **Agitation Indicator Eye (Fig A # 9)** is blinking from green to black every few seconds while machine is pressurized and operating. If the **Agitation Indicator Eye (Fig A #9)** is not changing, call Sponge-Jet for technical assistance in the U.S.A. at 800-776-6435 / 207-439-0211.
3. After depressurizing the system in accordance with Section 4.2, open the **Port Hole Cover (Fig B #19)** and check that **Actuator Tree Assembly (Fig D #29)** is attached to **Media Actuator (Fig D #31)**. Reconnect if necessary.

6.9.3 Too much media exits the Nozzle and/or media is pulsing out of nozzle.

1. Check that the **Choke Valve (Fig B # 24)** is in full open position (e.g. parallel to pipe). Open if necessary and continue.
2. Check the **Media Feed Gauge (Fig A #8)** is not set above 3.4 Bar (50 psi), if so, reduce the pressure as necessary.

6.9.4 Blast Pressure increases and decreases continuously or Feed Unit exhausts intermittently while blasting:

1. Check for holes in **Control Lines (Fig E #34)** and check for air leaks at all fitting connections. Repair, replace or tighten as necessary.
2. Remove **Exhaust Valve Cover (Fig C # 18)** and inspect for obstructions and check inner gasket for rips or any small holes. Clean or replace as necessary.

6.9.5 Panel testing in the non-blasting mode

This procedure will help to diagnose possible component problems in the Panel and in the Actuator system within the Pressure Vessel. This special diagnostic activity should only be performed by Certified Operators or under the direct guidance of a Sponge-Jet Technical Service Representative.

1. Turn the **Blast Pressure Regulator Handle (Fig A #16)** counter-clockwise to the off position by rotating the handle until the handle is removed from the body of the valve.
2. Turn the **Media Feed Regulator Handle (Fig A #15)** counter-clockwise to the off position by rotating the handle until the handle is removed from the body of the valve.

Remove **Port Hole Cover (Fig B #19)** and evacuate enough abrasive media in the Pressure Vessel so that the **Media Actuator (Fig D #31)** and the **Actuator Tree Assembly (Fig D #29)** can be clearly seen.

By following the above procedure when testing the panel and actuator system the auger will <u>not</u> be rotating and the Feed Unit will <u>not</u> be blasting. This will allow the operator to diagnose each component individually. Normal actuator motion is 45 degrees alternating direction every 1-2 seconds.

The components do not rotate beyond 45 degrees.

6.9.6 Air flows through Blast Nozzle but with <u>no</u> media in the airstream and the Auger is rotating:

1. Adjust the panel to the Non-Blasting Mode. (6.9.5)
2. Remove top orange output airline on the **Internal Panel Filter (Fig F #39)**, depress the **Deadman Trigger Handle (Fig E #36)** and check for airflow from top of **Internal Panel Filter (Fig E #39)**, which should be continuous.

6.9.7 If no airflow is felt from the top of the Internal Panel Filter:

1. Replace the Internal Panel Filter Cartridge with **Spare Sponge-Jet Filter Cartridge (Fig F #44)** held inside Panel, when replacing the filter it is necessary to switch airline fittings from old filter to new.
2. Re-test for airflow and check for proper motion of the **Agitation Indicator Eye (Fig A #9)**. When operating properly a light pulse of air can be felt exiting from the top of the **Timer (Fig F #40)**.
3. Resume blasting.

6.9.8 If no pulse of air is felt at the top of the Timer:

1. Check that **Timer (Fig F #40)** is set properly at .75 for 85L and 1.75 for 240L/XL
2. Reset if necessary
3. Test for pulse of air, and check for proper motion of the **Agitation Indicator Eye (Fig A #9)** and **Actuator Tree Assembly (Fig D #29)**.
4. Resume blasting

6.9.9 If no pulse of air is felt at the top of the Timer once it has been set to .75 or 1.75:

1. Remove the 2 screws on face of timer and replace the timer, available from Sponge-Jet, Inc.
2. Test new timer for pulse of air and check for proper motion of the **Agitation Indictor Eye (Figure A #9)** and the **Actuator Tree Assembly (Fig D #29)**.
3. Resume blasting

6.9.10 If a pulse of air is felt at the top of the timer assembly, but media flow is still not either present or consistent:

1. With the **Deadman Trigger Handle (Fig E #36)** depressed, observe that the **Agitation Indicator Eye (Fig A #9)** is blinking and appears to be working.
2. If it is not, contact Sponge-Jet, Inc. (in the U.S.A. 800-776-6435 or 207-439-0211) for more detailed technical assistance.
3. If it does appear to be blinking, reduce the blast pressure to “0” bar (“0”psi) on the **Blast Pressure Gauge (Figure A #7)** using the **Blast Pressure Regulator Adjustment Handle (Figure A #16)**

4. Reduce the Media Feed Pressure to “0” psi by turning the **Media Feed Adjustment Handle (Fig A #15)** counter clockwise.
5. Open the **Port Hole (Figure B #19)** cover to the blast pot.
6. Depress the **Deadman Trigger (Figure E #36)** and observe the activity of the **Actuator Tree Assembly (Figure D #29)**. It should rotate 45 degrees in both directions, with motion occurring about every two seconds.
7. If it still does not operate call Sponge-Jet, Inc. US Technical Support at 1-800-776-6435, 207-439-0211 or fax 207-439-0309 for further assistance.

Sponge-Jet Feed Unit Requirements

Equipment and Air requirements

I.D. = Inner Diameter

O.D. = Outer Diameter

1. Feed Unit

A. Compressor

- $7m^3$/min (250 CFM) minimum at 7.6 bar (110 psi) for a #8 nozzles (16mm (1/2")).
- Occasionally a compressor is equipped with undersized outlets. To allow access to full compressor potential, compressor air outlet(s) should be no smaller than the recommended Supply Line diameters below.

Nozzle size determines the volume of air required to drive the media to the surface at a given pressure. The chart below depicts the volume of air required to support three different nozzle sizes at 5.6 bar (80 PSI). The minimum compressor size recommendations below include a 50% reserve factor, which is intended to account for the loss associated with friction and some nozzle wear.

Nozzle Size	Abrasive Lb per Min/Hr	Minimum m^3/CFM	Compressor Req. with Reserve
#6 (9.5mm / 3/8")	5.6 / 336	$4.8m^3$/170	$7m^3$ / 250 CFM
#7 (11mm / 7/16")	6.8 / 408	$6.4m^3$/225	$10.6m^3$ / 375 CFM
#8 (13mm / 1/2")	8 / 480	$7m^3$ / 250	$10.6\text{-}12m^3$ / 375-425 CFM

***Remember the smallest I.D. in the entire system determines the maximum airflow volume for the entire blast system.**

B. Air Supply Hose requirements

1. 32mm (1.25'') I.D. hose up to 61m (200')
2. 51mm (2'') I.D. hose up to 91m (9300')
3. 72mm (3'') I.D. hose above 91m (300')

*Use air lines larger than the recommended, whenever possible.

C. Fittings

- With 32mm (1.25") to 51mm (2") I.D. hose use: (32-38mm) 1.25-1.5" I.D. Universal 4 Lug Air Coupling
- With 51mm (2") and larger use: Boss Fittings

D. Blast Lines

Sponge Media abrasive has been successfully blasted through 91m (300') of final blast line. However, when choosing between long Air Supply Line and long Blast Hoses, attempt to keep the Blast Hoses as short as practical. Below are the recommended maximum lengths:

- Up to (915m) 50' of .75" (or 1") / 19mm (or 25mm) I.D. "Whip" Blast Hose

connected to…

- Up to 30m (100') of minimum 32mm (91.25") I.D. Blast Hose

which may be further connected to…

- Up to an additional 100' / 30m of minimum 38mm (1.5") Blast Hose.

Blast Hose lengths above 91m (300') are not recommended.

Note: No electricity is required to run Feed Units.

2. Electric Media Classifier

1. The Electric Media Classifier requires a 115 volt, 20 amp dedicated circuit. Appropriate heavy gauge extension cords need to be used to support the above electrical requirements.

It should be noted that long lengths of extension cord may lessen the voltage from the supply as delivered to the classifier causing increased amperage draw, heat and resulting tripped circuits and even electrical damage to the classifier motor.

***Always use the shortest amount of extension cord as possible and with proper capacity.**

Note: Sponge-Jet Pneumatic Classifiers are also available. See separate Operator Manuals for each Sponge-Jet Electric and Pneumatic Classifier.

3. Recommended Tools

6'' Pliers
10'' Channel Locks
Screw Drivers (Regular and Phillips)
10'' T handle Hex Key: 9/64'' and 3/16''
10'' Adjustable Wrench
Wrenches: 1/2'', 9/16'', 5/8'', 3/4'', and 11/16''.
Small Hammer
12'' Pipe Wrench
Grease gun and grease
Pneumatic tool oil
WD-40 or equivalent

4. Recommended Spare Parts (available from Sponge-Jet)

1, 1/4'' muffler

1 Air motor

1 Auger

3 Nozzle washers

3 Hose washers

1 Hose repair kit for control lines

1 Automatic drain Kit

1 'O' ring for 1.25'' main air/water separator

1 Norgren actuator valve

1 timer

3 ft.-5/32'' pneumatic hose

3 ft.-3/8'' pneumatic hose

5. Media Management

Media Management is the way new and used sponge are added together while work is in process for best results and economy. As sponge is blasted and recycled, the sponge breaks down into smaller and more abrasive particles. By adding and mixing new sponge with the used sponge, the result will be that the larger particles of sponge will suppress the dust generated by the fast cutting used sponge. This mixture of new and used sponge is called the working mix.

All blasting applications will require specific consumption analysis. As a rule of thumb:

- Using a 1/2" - #8 Nozzle, 1/2 bag of new Sponge Media abrasive should be added to the working mix every 30 minutes of nozzle blast time.
- Using a 3/8" - #6 nozzle, 1/4 bag of new Sponge Media abrasive should be added to the working mix every 30 minutes of nozzle blast time.

New Sponge Media abrasive can be mixed with used Sponge Media abrasive in one of two ways.

1. By hand, in a bucket or in media bags, after the used Sponge Media abrasive has been classified.
2. By mixing the new Sponge Media abrasive with used Sponge Media abrasive, prior to classifying, at the top of the classifier. This will allow the classifier to perform the mixing.

Fines

Fines are small particles of contaminant and spent media abrasive. They are removed from the working mix through the classifying process and flow through the bottom port of the Classifier.

Fines can be reused in some circumstances by adding a portion of the fines generated back into the working mix described above. The exact amount of fines reintroduced will be determined by how much dust can be tolerated in the work area.

Many users find other uses for fines. For example, a contractor used silver media on the superstructure of a paper machine to remove paint, corrosion and contaminates. As the Silver Sponge Media abrasive broke down, the contractor saved the fines in 250L (55-gallon) drums. Once a year at this particular paper mill each boiler is shut down for cleaning. Dust levels are not a significant problem inside the boiler, therefore Silver Sponge Media abrasive fines were utilized as a cleaning abrasive within the boiler.

WARNING: Fines should not be reused when working with hazardous substances such as lead paint.

6. Media Uses and Approximate Settings

The settings and descriptions below are approximate. Individual applications and uses will vary.

BP = Blast Pressure
MFP = Media Feed Pressure

Green Sponge Media™

- General contaminant cleaning.
- Soot removal from stone and concrete.
- Cleaning painted surface while providing slight profile for repainting

Settings: BP: 2.1-5.9 bar (30-85 psi). **MFP:** (1.7-3.1 bar) 25-45 psi.
Profile Generated: Not applicable

White Sponge Media™

- Paint removal from composites
- Paint removal on delicate metallic substrates
- Tenacious contaminate removal
- Mold cleaning of baked on residues

Settings: BP: 2.1-4.1 bar (930-60 psi). **MFP:** 1.7-3.1 bar (25-45 psi).
Profile Generated: Not applicable

Brown Sponge Media™

- Light paint and contaminant removal
- Clean and profile existing paint for recoating
- Paint De-glossing

Settings: BP: 2.1-5.9 bar (30-85 psi). **MFP:** 1.4-3.1 bar (20 to 45 psi).
Profile Generated: 25-50 microns (1-2 mils)

Silver Sponge Media™

- Paint and contaminant removal on steel
- Paint and contaminant removal on aluminum
- Paint and contaminant removal on concrete, masonry, and block
- General surface preparation activities
- Rust and mill scale removal
- Char removal

Settings: BP: 2.8-5.9 bar (40-85 psi). **MFP:** 1.4-3.1 bar (20-45 psi).
Profile Generated: 63-113 microns (2.5-4.5 mils)

Red Sponge Media™

- Same as silver but generally used on thicker coatings
- Elastomeric coatings

Settings: BP: 2.1-5.9 bar (30-85 psi). **MFP:** 1.4-3.1 bar (20-45 psi).
Profile Generated: 100-150 microns (4-6 mils)

7. Containment

Containment is an integral part of the Sponge-Jet process as with any abrasive blasting. Sponge-Jet Sponge Media is recyclable, reusable and environmentally friendly due to the low volumes of waste and dust generated. To take advantage of these properties, containment must be used to capture and reclaim the sponge.

Under normal conditions, when abrasive Sponge Media is being used, a light 6 to 10 mil poly containment can contain the abrasive sponge. More stringent containment may be required when working with hazardous substances and in areas where dust is a critical concern. These types of containment may also require negative air machines to further reduce dust levels inside the containment as well as outside the containment.

When working with hazardous substances always follow local, state and federal guidelines concerning proper containment, containment ventilation and monitoring procedures.

Containment also serves another purpose: it keeps the working area clean from foreign debris. Once the containment has been erected, a thorough cleaning of the contained area should be the next step. This will serve to minimize any foreign debris that, if reused with the sponge media, could clog or jam the equipment. By initially cleaning the area, many unnecessary problems and machinery inconveniences can be avoided. The better the containment and initial cleaning the less time spent preparing Sponge Media abrasive for reuse and cleaning up when the job is finished.

8. Safety

Operation of the Sponge-Jet system necessitates the use of certain safety equipment. Because the Sponge Blasting System is an industrial abrasive blasting technology, commercial use of the product in the USA falls under the scope and power of OSHA and other local regulatory agencies. Be aware of the rules governing usage in your own circumstances. Certain types of safety equipment are almost universally required.

Proper safety equipment includes but is not limited to:

- Hearing protection
- Eye protection - safety glasses / safety shield / blasting hood or helmet
- Respiratory protection as required
- Gloves
- Safety shoes
- Protective clothing

To ensure proper compliance always follow local, state and federal guidelines. When using Sponge-Jet to remove hazardous materials, other safety issues will arise such as quality of air in containment, quality of air outside containment, and worker exposure limits. Refer to local, state and federal guidelines as situations require.

Figures

Sponge-Jet Feed Unit 85 L, 240 L and 240 XL

Sponge-Jet Feed Unit Parts

Figure A: (Front View)

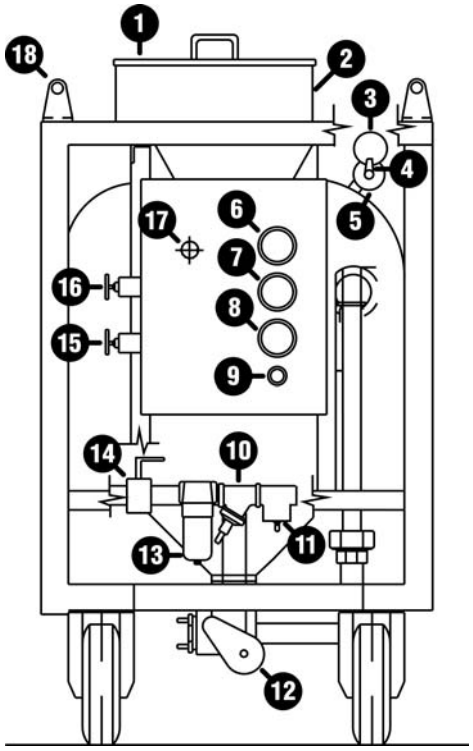

Figure A

1: Hopper Lid
The Hopper Lid prevents any foreign debris from entering the Feed Unit, should be placed on the hopper during Feed Unit operation.

2: Hopper
The Hopper holds the reserve Sponge Media for the Feed Unit.

3: Exhaust Muffler
The Exhaust Muffler reduces the noise caused by the air exiting the Feed Unit. The Exhaust Muffler must be periodically emptied of Sponge Media and/or other foreign debris.

4: Relief Valve (Optional)
The Relief Valve automatically releases air pressure from the pressure vessel when the internal air pressure exceeds 8.4 bar (125 psi).

5: Exhaust Valve
The Exhaust Valve allows air contained in the pressure vessel to escape during depressurization.

6: Line Pressure Gauge
The Line Pressure Gauge indicates the amount of pressure entering the Feed Unit from the compressor. The recommended inbound pressure is 8 bar (120 psi).

7: Blast Pressure Gauge
The Blast Pressure Gauge indicates the amount of pressure exiting the nozzle. The recommended pressure for effective coatings removal and optimal media reuses is 5.9 bar (85 psi) or less.

8: Media Feed Gauge
The Media Feed Gauge indicates the amount of air pressure being supplied to the Media Feed Air Motor. This in turn relates to how much Sponge Media that is introduced into the air stream. The recommended pressure for optimal coatings removal is 1.4-2.8 bar (20-40 psi).

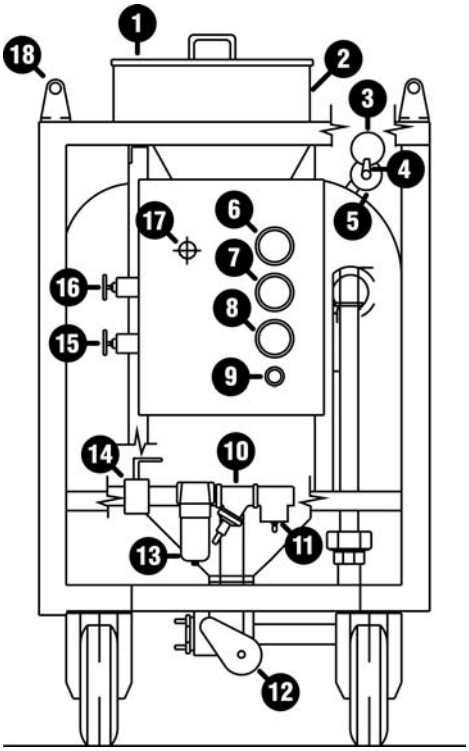

Figure A (repeated)

9: Agitation Indicator Eye
The Agitation Indicator Eye shows the rate at which the Sponge-Jet Actuator Tree Assembly is actuating within the pressure vessel.

10: Aquamatic Valve
The Aquamatic Valve serves as the Feed Unit's on/off switch. When the Aquamatic Valve is open, blasting is initiated. When the Aquamatic is closed the Feed Unit is depressurized and turns off.

11: Blast Pressure Regulator
The Blast Pressure Regulator regulates the amount of airflow traveling through the Feed Unit and out to the nozzle.

12: Auger Chain Guard
The Auger Chain Guard prevents injury from contact with the drive chain.

13: Secondary Water Separator
The Secondary Water Separator separates water from the air stream with an 80-micron filter.

14: Main Air Ball Valve
The Main Air Ball Valve starts and stops the airflow from entering the Feed Unit. This device is not a regulation device.

15: Media Feed Regulator Handle
The Media Feed Adjustment Handle allows the pot tender to regulate the amount of media provided to the airline for blasting. Rotating the handle to the right, or clockwise, will increase the amount of media delivered to the airline. Rotating the handle to the left, or counter clockwise, will decrease the amount of media delivered to the airline.

16: Blast Pressure Regulator Handle
The Blast Pressure Adjustment Handle allows for the adjustment of airflow to the Blast Nozzle.

17: Emergency Stop Button
The Emergency Stop Button stops the Feed Unit instantly, when depressed.

18: Lifting Lug
The lifting lugs are used to properly attach lifting slings to the Feed Unit.

Figure B: (Rear View)

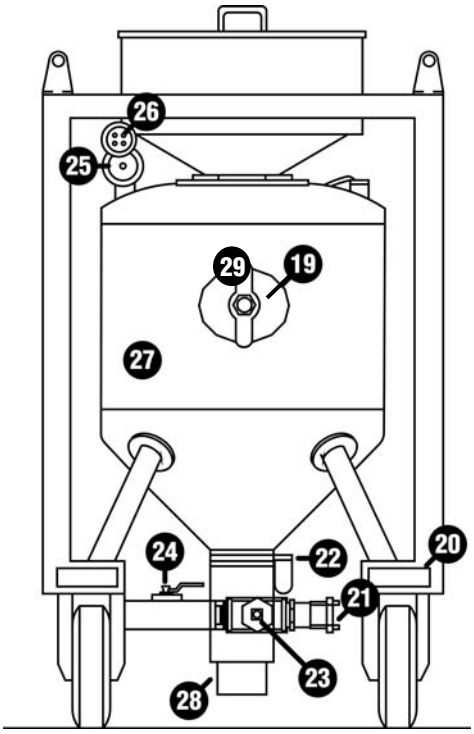

Figure B

19: Port Hole Cover
The Port Hole Cover allows access to the inside of the pressure vessel.

20: Forklift Pockets
The Forklift Pockets allow the Feed Unit to be lifted or moved with a forklift.

21: Blast Line Connection
The Blast Line Connection is a two-pronged universal blast line connector fitting, which allows for connection from the blast line to the Feed Unit.

22: Moisture Separator
The Moisture Separator, which automatically drains when full, protects the air motor from excess moisture.

23: Auger Tunnel End Cap
The Auger Tunnel End Cap allows access to the auger for cleaning purposes.

24: Choke Valve (when present)
The Choke Valve is normally fully open. The Choke Valve, when closed, directs the air stream through the Pressure Vessel and can be used to clean out the Feed Unit. The choke valve in the closed position causes sponge media to quickly exit the Feed Unit.

25: same as part #5 on the front view

26: same as part #3 on the front view

27: Pressure Vessel
The pressure vessel is where sponge media is stored during blasting.

28: Clean Out Trap
The clean out trap catches foreign debris, not meant to pass through the nozzle. The clean out trap must be periodically emptied of all debris.

29: Crab Assembly
The Crab Assembly secures the Port Hole Cover, sealing the Pressure Vessel for operation during blasting. The Crab assembly includes one or more Crab Braces and the same amount of nut and bolt assemblies.

Figure C: Exhaust System

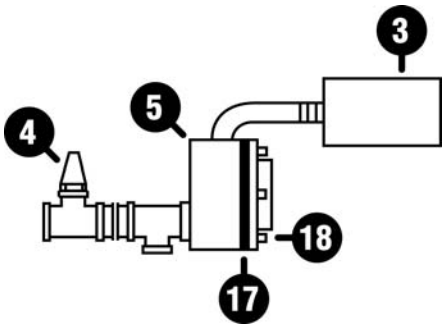

Figure C

3: Exhaust Muffler
The Exhaust Muffler reduces the noise caused by the air exiting the Feed Unit. The Exhaust Muffler must be periodically emptied of Sponge Media and/or other foreign debris.

4: Relief Valve (Optional)
The Relief Valve automatically releases air pressure from the pressure vessel when the internal air pressure exceeds 8.4 bar (125 psi).

5: Exhaust Valve
The Exhaust Valve allows air contained in the pressure vessel to escape during depressurization.

17: Exhaust Valve Diaphragm
The Exhaust Valve Diaphragm regulates the release of air pressure from the Feed Unit when the Deadman Trigger is released.

18: Exhaust Valve Cover
The Exhaust Valve Cover secures the Exhaust Valve Diaphragm during operation of the Feed Unit.

Figure D: (Internal View)

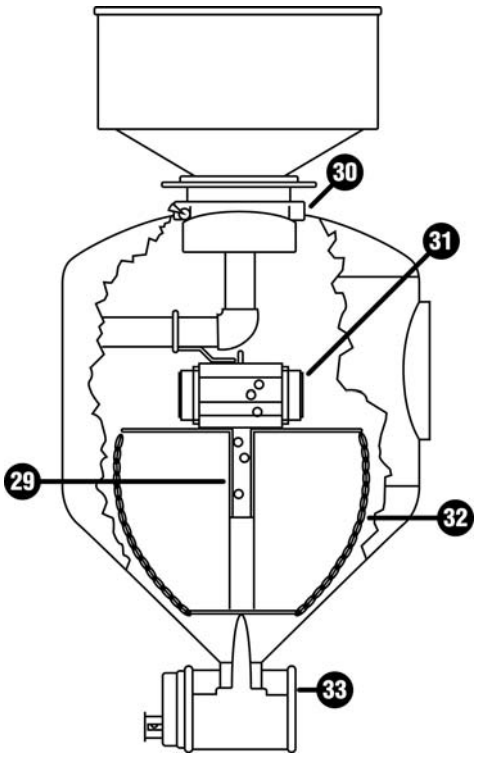

Figure D

29: Actuator Tree Assembly
The Actuator Tree Assembly agitates sponge media in the pressure vessel.

30: Pop-Up Valve
The Pop-Up Valve seals the pressure vessel during blasting.

31: Media Actuator
The Media Actuator is a pneumatic motor that turns the actuator arm assembly, inside the pressure vessel. The media actuator assists in providing a continuous sponge media supply during blasting.

32: Actuator Chain
The Actuator Chain assists in movement of media through the pressure vessel.

33: Lower End Assembly
The Lower end Assembly houses the Auger
(Refer to Figure “G” on page 29).

Figure E: “Deadman” (Trigger Assembly)

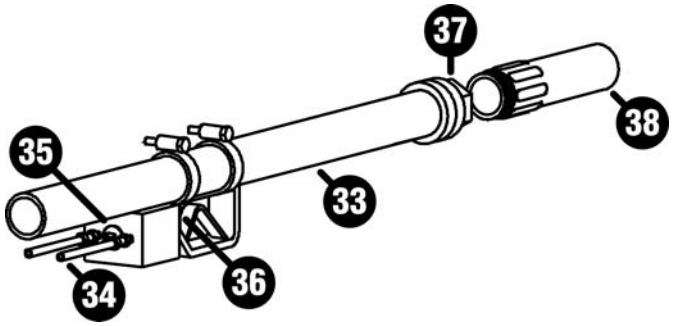

Figure E

33: Blast Hose
The Blast Hose conveys the media from the Pressure Vessel to the Nozzle.

34: Control Line
The Control Line flows the pneumatic circuit of air from the Deadman to the Aquamatic Valve.

35: Clean Out Screw
The Clean Out Screw provides maintenance access to the internal components of the Deadman Trigger.

36: Deadman Trigger
The Deadman Trigger allows for on or off operation of the Deadman System.

37: Nozzle Connector
The Nozzle Connector connects the Nozzle to the Blast Hose.

38: Blast Nozzle
The Blast Nozzle is an acceleration tip designed to focus the blasting media at a desired location for blasting activities.

Figure F: Internal Control Panel

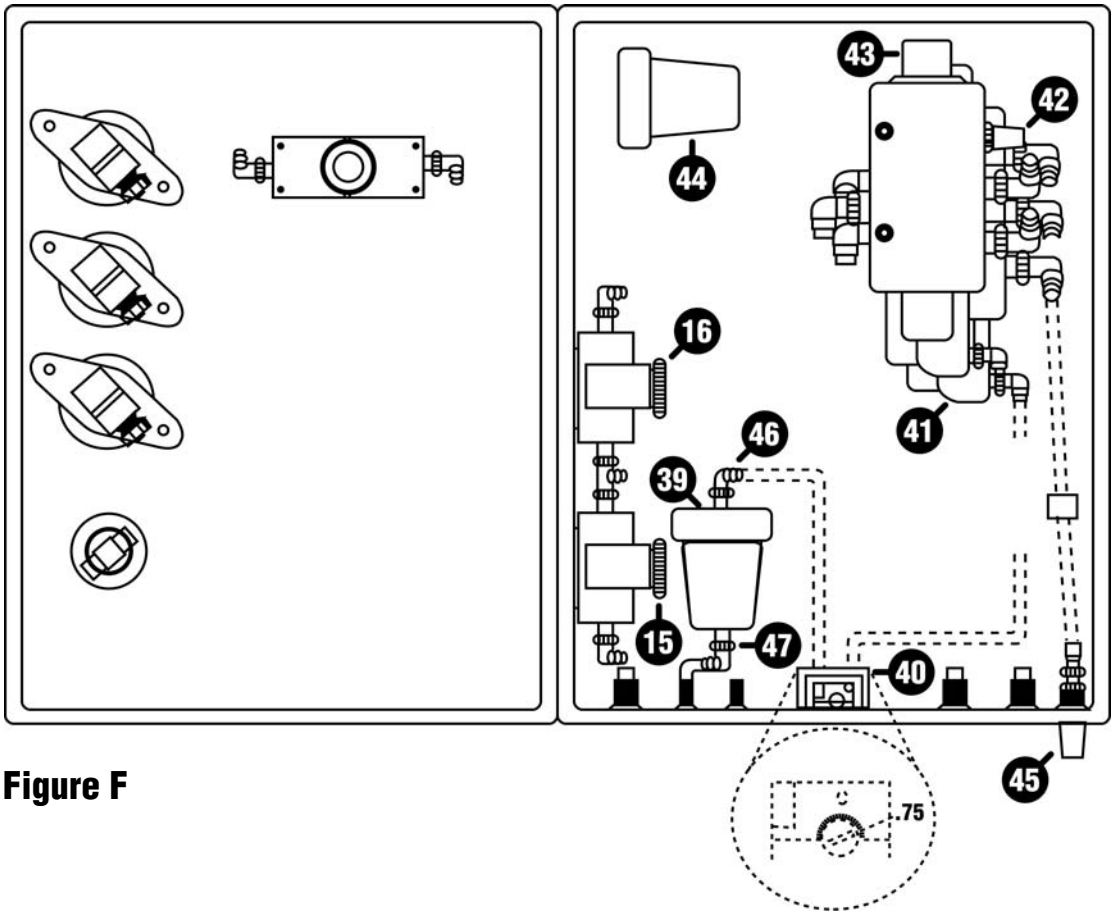

Figure F

39: Internal Panel Filter
The Filter removes vapor level moisture from the pneumatic Timer Circuit.

40: Timer
The Timer is a pneumatic timing mechanism that regulates the delay interval of the Actuator's motion.

41: Auger Instant Off
The Auger Instant Off system immediately vents the Air Motor and stops the flow of media through the Feed Unit, as the operator releases the Deadman, or the Emergency Stop System is activated.

42: Exhaust Muffler
The Exhaust Muffler relieves pressure associated with various systems on the Feed Unit.

43: Agitation Control Valve
The Agitation Control Valve provides the pneumatic signal that activates the Actuator Tree Assembly.

44: Internal Panel Spare Filter
The Spare Filter replaces #39.

45: External Panel Muffler (if mounted)
The Ext. Panel Muffler vents signal air from the Actuation System.

46: Internal Panel Filter (Output Line)
The Filter (Output Line) is the outbound connection of the Vapor Filter.

47: Internal Panel Filter (Input Line)
The Filter (Input Line) is the inbound connection for the air supply to the vapor.

Figure G: (Lower End Assembly)

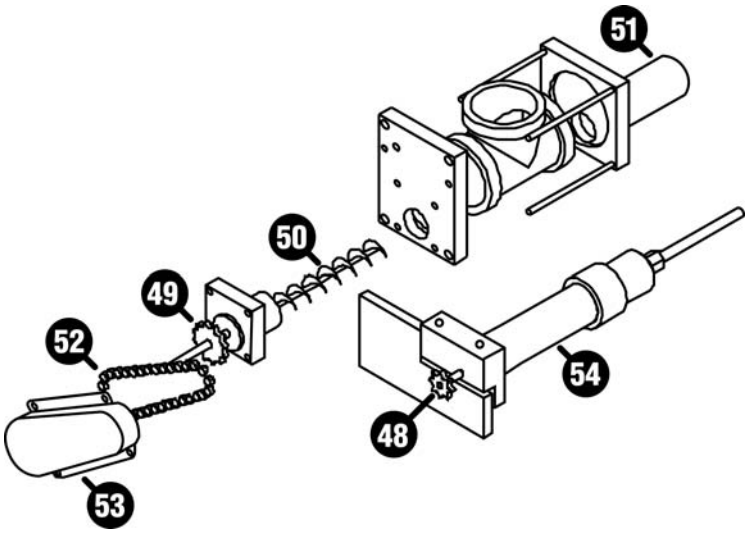

Figure G

48: Auger Motor Sprocket
The Air Motor Sprocket drives the Auger Drive Train.

49: Auger Sprocket
The Auger Sprocket drives the Auger.

50: Auger Shaft
The Auger Shaft meters Sponge Media abrasive into the air stream.

51: Auger Tunnel End Cap
The Auger Tunnel End Cap allows access to the far end of the Auger.

52: Auger Drive Chain
The Auger Drive Chain, in conjunction with the Auger Sprocket, rotates the Auger Shaft.

53: Auger Chain Guard
The Auger Chain Guard protects the Air Motor Sprocket and the Auger Drive Chain.

54: Auger Motor
The Air Motor, through adjustment at the control panel, regulates the air/media mixture by turning the Auger Shaft.

NOTES: _____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

MODEL#: _____

SERIAL#: _____